

IN THE CLAIMS

Please cancel claims 28-35 without prejudice to consideration in a continuing application.

Please add claims 36-45 as follows:

36. (New) The semiconductor via structure of claim 21, further comprising a dielectric layer positioned on the layer of SOG material, the dielectric layer being positioned over the hydrophobic material layer.
37. (New) The semiconductor via structure of claim 21, wherein the layer of SOG material and the dielectric layer each include silicon dioxide and the hydrophobic material layer includes halogen atoms bonded to silicon atoms.
38. (New) A semiconductor apparatus, comprising:
- a substrate;
 - a conductor positioned on the substrate;
 - a first dielectric layer in contact with at least a portion of the conductor;
 - a second dielectric layer on the first dielectric layer; and
 - a via defined through the first dielectric layer and the second dielectric layer, the first dielectric layer including a hydrophobic material portion defining a via wall, the hydrophobic material including halogen atoms bonded to silicon atoms; and
 - a metal layer positioned on the second dielectric layer and extending into the via to electrically connect to the conductor.

39. (New) The apparatus of claim 38, wherein the first dielectric layer and the second dielectric layer include silicon dioxide.

40. (New) The apparatus of claim 38, further comprising an electrically conductive layer between the metal layer and the second dielectric layer.

41. (New) The apparatus of claim 40, wherein the metal layer includes tungsten and the conductive layer includes titanium nitride.

42. (New) the apparatus of claim 41, wherein the halogen atoms are fluorine atoms.

43. (New) The apparatus of claim 38, wherein the halogen atoms are chlorine atoms and the metal layer includes copper.

44. (New) An apparatus, comprising:

- a chamber;

- a halogen supply to provide a halogen-containing gas to the processing chamber.

- a semiconductor device positioned in the chamber, the semiconductor device including:

- a substrate;

- a conductor formed on the substrate;

- a first dielectric layer positioned on the conductor;

a second dielectric layer positioned on the first dielectric; and

wherein the first dielectric layer and the second dielectric layer define a via hole; a via hole wall surface of the first dielectric layer including a porous material of silicon bonded to hydroxyl groups indicative of a SOG dielectric material, porosity of a via hole wall surface of the second dielectric layer is greater than the first dielectric layer, and the processing chamber and the halogen supply are controlled to cause a reaction between the halogen-containing gas and the porous material to provide a hydrophobic material by exchanging the hydroxyl groups with halogen atoms.

45. (New) The apparatus of claim 44, wherein the first dielectric layer and the second dielectric layer each include silicon dioxide and the halogen-containing gas is in the form of CCl_4 or NH_4F .